

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 6, and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Chiang.

As per claims 1 and 6, Chiang discloses a process for operating a vehicle climate control system wherein, when a carbon dioxide level above a threshold value, the system is switched from recirculation to fresh air modes (Figure 3).

As per claim 10, Chiang discloses control device 20 for adjusting a recirculation/fresh air adjustment drive.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 2, 8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiang in view of Kenji (JP59109413A).

As per claims 2, 8, and 9, Chiang does not specifically state switching the operating mode based on detection of an ashtray opening or an indication of smoking. Kenji teaches a vehicle air conditioning system wherein fresh air is introduced into the vehicle upon such detection in order to ventilate the passenger space (Abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to similarly introduce fresh air into the system of Chiang upon such detection for the same purpose of ensuring proper air quality within the passenger compartment.

Claims 3-5, 7, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiang.

As per claims 3 and 11, Chiang does not specifically state that the air conditioner uses CO<sub>2</sub> as a refrigerant. However, CO<sub>2</sub> is a commonly known refrigerant with advantageous environmental properties. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use CO<sub>2</sub> as the refrigerant in Chiang for this purpose, and further since Chiang is specifically concerned with CO<sub>2</sub> levels in a vehicle.

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As per claim 4, official notice is taken that the 800 ppm level is a matter of engineering design choice arrived at through routine experimentation yielding predictable results to one of ordinary skill in the art. (Note that Chiang teaches a relatively close upper threshold of 1000 ppm (column 3, line 10)).

As per claim 5, Chiang does not specifically teach introducing air through to the foot space of the vehicle. Official notice is taken that foot vents are generally common and well known features of vehicle air conditioning systems and that, since it is well known that CO<sub>2</sub> is denser than air, one would want to ventilate the lower portion of the vehicle.

As per claim 7, similarly, since it is well known that CO<sub>2</sub> is denser than air, it would have been obvious to one of ordinary skill in the art at the time the invention was made as a matter involving predictable results to place the CO<sub>2</sub> sensor near the floor of the vehicle since that is where the CO<sub>2</sub> would first congregate.

As per claim 12, Chiang does not specifically teach an expansion valve of the air conditioning system. However expansion valves are typical and integral features of most refrigeration cycles, and are typically places upstream of the evaporator. It is also well known that closing an expansion valve stops refrigerant to the evaporator. Accordingly, official notice is taken that this is a well known means for stopping refrigerant flow that would have been generally obvious to apply to the system of Chiang regardless of the CO<sub>2</sub> control features.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chiang in view of Watanabe et al.

As per claim 13, Chiang does not teach a valve at the compressor inlet for switching off the compressor. However, such valves are old and well known. Watanabe et al. for example

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teach valve 30 upstream of compressor inlet port 1A for shutting off the compressor (see column 7, line 55 – column 8, line 16). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include such a valve in the refrigeration cycle of Chiang for the purpose of controlling operation of the compressor.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Marc E. Norman whose telephone number is 571-272-4812. The examiner can normally be reached on Mon.-Fri., 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Dr. Marc E. Norman/  
Primary Examiner, Art Unit 3744